CITY OF COEUR D'ALENE

WASTEWATER UTILITY DEPARTMENT

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**Sent via E-mail to: Daniel.Redline@deq.idaho.gov**

Daniel Redline
Regional Administrator
Coeur d'Alene Regional Office
Department of Environmental Quality
State of Idaho
2110 Ironwood Parkway
Coeur d'Alene, ID 83814

Re: Comment on June 25, 2013, Revised Draft §401 Water Quality Certification for City of Coeur d'Alene WTP NPDES Permit Number ID-002285-3

Dear Mr. Redline,

Thank you for the opportunity to comment on the Revised Draft 401 Water Quality Certification dated June 25, 2013. The City of Coeur d'Alene appreciates your consideration of its request for necessary compliance schedules to meet nutrient limits imposed to meet water quality standards in the state of Washington for dissolved oxygen. Coeur d'Alene is pursuing a substantial facility upgrade that will reasonably require the compliance schedule set forth in the certification to design, build and optimize the new treatment systems. I appreciate your consideration of concerns that we have expressed regarding mass loading limits for cadmium and lead. The City respectfully requests, however, that the Department of Environmental Quality remove the concentration limits from the final certification. As discussed below, the City does not believe that these limits are legally required or properly derived. This is a circumstance where the levels of cadmium and lead in the Coeur d'Alene effluent are not likely to cause or contribute to violations of water quality standards. In fact, effluent cadmium and lead concentrations in Coeur d'Alene effluent are well below the state water quality standards and the Coeur d'Alene effluent adds assimilative capacity to the river for cadmium and lead.

**1. Application of IDAPA 58.01.02.055.04.**

We respectfully disagree with how the Department has interpreted and applied Section 55.04 in the revised certification. By its terms, Section 055.04 is not applicable to an existing source. It only applies to a "new or increased discharges of pollutants." Nor is there evidence that discharges that meet the cadmium and lead water quality criteria will in any way result in an increased loading of metals to the river. It is generally accepted that current cleanup efforts above Lake Coeur d'Alene will result in reduced loadings over time. There is nothing about the

Coeur d'Alene effluent that is going to reverse this trend and therefore there is no justification for imposing effluent limits on Coeur d'Alene under Section 055.04.
In correspondence from Director Franzen to legislators dated May 21, 2013, the Department made clear that the intent of Section 055.04 is to maintain "water quality to support designated uses, in this case, specifically aquatic life uses." See Attachment A. In the same letter, Director Franzen emphasizes that the Department intends to regulate metals to ensure that the "effluent concentrations meets the criteria applicable to these metals." *Id.* As discussed below, the Coeur d'Alene effluent does not have the reasonable potential to cause or contribute to a violation of water quality criteria for cadmium and lead. It is therefore unnecessary and contrary to the Department's interpretation of Section 055.04 in the May letter to now impose performance based limits. The proposed limits are not necessary to protect or maintain water quality and they are derived using limited data and pose an unnecessary compliance risk on the City.

**2. Coeur d'Alene is not likely to cause or contribute to a violation of cadmium and lead water quality criteria.**

EPA has determined in the Revised Fact Sheet that the discharges from the Coeur d'Alene Wastewater Treatment Plant (WTP) are not likely to cause or contribute to a violation of Idaho water quality criteria for cadmium and lead. Appendix D: Reasonable Potential Calculations presents an analysis of the Coeur d'Alene discharge with the receiving water conditions and concludes that effluent limits are not required. The result of the reasonable potential analysis in the Revised Fact Sheet, Appendix D Table 2 on page D-5 clearly shows no effluent limits are required for cadmium and lead.

Our consultant, HDR, reached the same conclusion as EPA by analyzing effluent metals monitoring data from January 2000 through February 2013. HDR provided a statistical analysis for comparison with the water quality criteria, as summarized in Table 1. The analysis included a calculation of the minimum, maximum, average, median, 92nd, 98th, and 99.7th percentiles for the entire dataset. For data reported as less than a laboratory detection limit (typically <0.1 mg/L), the numerical value of the detection limit was used for the statistical analysis (<0.1 mg/L was analyzed as 0.1). This is a very conservative assumption that over-estimates the actual magnitude of the metal concentration present in the effluent.

The effluent concentration data at the end-of-the pipe for both cadmium and lead are below the applicable acute and chronic water quality criteria, as shown in Table 1. The effluent data analysis shows that there is no reasonable potential for exceedences of water quality standards for cadmium and lead because the effluent concentrations are lower than the water quality standards.

***Table 1: Coeur d'Alene Effluent Concentration Performance Statistics (January 2000 through February 2013) and Water Quality Criteria***

| Statistic | *Cadmium, µg/L* | | *Lead, µg/L* | |
|---|---|---|---|---|
| | **Effluent Data** | **Water Quality Criteria** | **Effluent Data** | **Water Quality Criteria** |
| Minimum | 0.01 | | 0.17 | |
| Maximum | 1.00 | | 6.71 | |
| Mean | 0.10 | | 0.73 | |
| 50th Percentile | 0.08 | | 0.50 | |
| 92nd Percentile (Max Month) | 0.15 | ***Chronic*** ***0.67*** | 1.53 | ***Chronic*** ***3.1*** |
| 98th Percentile (Max Week) | 0.63 | ***Acute*** | 2.29 | ***Acute*** |
| 99.7th Percentile (Max Day) | 1.00 | ***1.69*** | 6.57 | ***80.8*** |

Since any future Spokane River TMDL designed to address the water quality impairments in the 2010 303(d) list will use the same water quality criteria for cadmium and lead as numeric endpoints, it is unnecessary to apply effluent limits in the Coeur d'Alene permit because the effluent concentrations are well below the standards:

- Cadmium Water Quality Criteria: Chronic 0.67 µg/L and Acute 1.69 µg/L
- Lead Water Quality Criteria: Chronic 3.1 µg/L and Acute 80.8 µg/L

### 3. Analysis of Derivation of Performance Based Limits.

The June 25, 2013 Revised Draft 401 Water Quality Certification included with the Revised Fact Sheet states that Cadmium and Lead limits are being included despite the fact that there is no reasonable potential for exceedences of a water quality standard due to a 303(d) listing for metals:

- "*In order to ensure compliance with section 055.04, DEQ has included in the draft certification cadmium limits that reflect the current concentration of cadmium in CDA's effluent using the 99$^{th}$ percentile value from the 2006-2011 DMR data. Lead effluent limits from the 1999 permit which were removed by the 2004 modification have been reinstated by the 401 certification to meet requirements of section 055.04.*"

With regard to Lead, the 1999 Fact Sheet, Table C-10: Metals Limits for the City of Coeur d'Alene presents the basis for the proposed Lead limits (Average Monthly 2.5 µg/l, Max Daily 5.8 µg/L) as a water quality based effluent limit using effluent and river data from the 1990's. This does not represent current conditions and is not a performance-based effluent limit. Reverting to the 1999 permit for effluent limits results in the use of effluent limits that are out of date by more than 14 years with regard to both effluent quality and receiving water conditions in

the Spokane River. Further, this approach is inconsistent with the contemporary reasonable potential analysis which EPA has presented in the Revised Fact Sheet. That reasonable potential analysis demonstrates that there is no basis for water quality-based effluent limits for lead.

With regard to Cadmium, the proposed effluent limits are presented as being based upon a statistical analysis of effluent performance using plant data from 2006 to 2011. The Revised Fact Sheet states that the 99$^{th}$ percentile value has been used. That is inconsistent, however, with the development of an Average Monthly Limit of 0.149 µg/L and a Weekly Limit of 0.187 µg/L that are included in the permit. The 99$^{th}$ percentile should be associated with a maximum daily limit, not a monthly or weekly limit. The analysis of effluent cadmium data presented in Table 1 above, based on effluent metals monitoring data from January 2000 through February 2013, shows that the 95$^{th}$ percentile value of cadmium is 0.15 µg/L and the 99$^{th}$ percentile value is 1 µg/L. The 95$^{th}$ percentile effluent concentration of 0.15 µg/L is 4.5 times lower than the Chronic water quality standard of 0.67 µg/L. The 99$^{th}$ percentile value of 1 µg/L is 1.69 times lower than the acute water quality standard of 1.69 µg/L. The proposed effluent limits for Cadmium in the Revised Draft 401 Water Quality Certification should be removed from the permit limits table since they are unnecessary to protect water quality and there is no potential to cause or contribute to an exceedance of a water quality standard.

Inclusion of performance based effluent limits poses an unnecessary compliance risk to the City. Basing effluent limits on historical performance statistics is completely unrelated to protection of water quality. And, as shown in the Fact Sheet, there is no potential for exceeding water quality standards for cadmium and lead as the effluent is well below the water quality standards even when applied at the end-of-pipe. Creating a compliance risk for the City by structuring a discharge permit based on historical statistics unnecessarily restricts effluent quality beyond water quality based effluent limits and beyond state water quality standards.

**4. Coeur d'Alene Effluent Adds Assimilative Capacity to the Spokane River.**

DEQ should also consider the fact that effluent discharged from the Coeur d'Alene treatment plant adds assimilative capacity for cadmium and lead to the Spokane River by providing hardness and water at concentrations that are always lower than the receiving water criteria. This was documented in the Department's previous proposed Wasteload Allocations (WLA) to the Idaho dischargers to the Spokane River calculated based on the hardness of the effluent. It was shown that because of the hardness in the effluent, the effluent actually added assimilative capacity to the river for the cadmium, lead and zinc. The hardness-based equations for the three metals were:

| | |
|---|---|
| Total Recoverable Cadmium | $y = \exp^{(0.7852[9\ln(x)]-3.49)}$ |
| Total Recoverable Lead | $y = 0.0261(x) - 0.1119$ |
| Total Recoverable Zinc | $y = \exp^{(0.8473[\ln(x)]=0.7614)}$ |

For Coeur d'Alene, assuming a minimum hardness of 132 mg/L as $CaCO_3$, the allowable concentrations are:

| | |
|---|---|
| Cadmium | y = 1.3 µg/L |
| Lead | y = 3.3 µg/L |
| Zinc | y = 132 µg/L |

The relative hardness values in the effluent and the river are discussed in the following analysis from the 2000 TMDL for Cadmium, Lead and Zinc:

> **6.6.c. Wasteload Allocations for Spokane River Treatment Plants**
>
> The State of Washington has issued an EPA-approved TMDL for metals in the Spokane River downstream of the state line (Washington Department of Ecology, 1999). Because the river and source conditions are similar in the Spokane River segment upstream of the state line, EPA allocates loading in a two-step method consistent with that used by the State of Washington in its Spokane River TMDL. In the first step, an upper bound concentration is calculated for each point source by applying the Idaho water quality criteria at the end-of-pipe using the effluent hardness (in other words, applying an "effluent-based criterion"). The effluent-based criterion accounts for differences between effluent and ambient hardness levels. **The hardness levels of the three municipal discharges to the Spokane River in Idaho are higher than that of the river, because these cities pump groundwater for their water supplies, and this source water has a significantly higher hardness than the Spokane River.**
>
> In simple terms, applying the effluent-based criterion is analogous to treating the effluent discharge as if it were a tributary that has higher hardness levels than the mainstem river. As discussed earlier, metals toxicity decreases with increased hardness. The tributary would be allowed to achieve less stringent (i.e., higher) metals criteria by virtue of its elevated hardness levels. It can be shown that the mixture of the tributary and mainstem waters would not result in any local criteria exceedances.

Therefore, it is unnecessary to cap effluent discharges of cadmium or lead from the Coeur d'Alene plant pending a TMDL because it is evident that the effluent from the treatment plant itself, at the end-of-pipe, already meets the criteria. Further, by contributing hardness and discharging at concentrations below the criteria, the Coeur d'Alene effluent actually adds assimilative capacity to the Spokane River for both cadmium and lead.

## Conclusion

The City of Coeur d'Alene respectfully requests that the Department of Environmental Quality remove the proposed effluent limits for cadmium and lead in the Revised Draft 401 Water Quality Certification. They are based on outdated data and they are unnecessary to protect water quality.

I appreciate your consideration of these comments.

Sincerely,

H. Sid Fredrickson
Wastewater Superintendent

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